Amendments to the Claims

Please amend Claims 29, 35, 38-39, 41, 43, and 44. Please add new Claims 45-47. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Previously Presented) An antenna array comprising:

multiple receiving elements configured to receive communications signals over a carrier frequency from a plurality of remote units, at least two receiving elements configured to receive the communication signals on a same frequency band during any period of time, the receiving elements being partitioned into a plurality of groups disposed remotely from one another by at least a predetermined minimum group spacing sufficient to obtain spatial diversity, each group containing at least one receiving element, at least one group including multiple receiving elements located proximal to one another and no farther apart than a predetermined maximum receiving element spacing to facilitate spatial filtering.

2. (Previously Presented) The antenna array of claim 1, wherein the predetermined maximum receiving element spacing is no more than one-half times a wavelength corresponding to the carrier frequency.

3. (Previously Presented) The antenna array of claim 1, wherein the predetermined minimum group spacing is at least five times a wavelength corresponding to the carrier frequency.

4. (Previously Presented) The antenna array of claim 1, wherein the multiple receiving elements constitute an adaptive antenna array and each group constitutes a sub-array.

5. (Previously Presented) The antenna array of claim 1, further comprising a controller configured to steer the multiple receiving elements electronically.

6. (Previously Presented) The antenna array of claim 1, wherein the multiple receiving elements constitute a switched beam antenna array.

7-28. (Cancelled)

29. (Currently Amended) A multi-point communications network comprising:

a transmitter and an antenna array receiver ~~and transmitter~~ disposed at a primary site;

a plurality of remote units disposed at respective secondary sites for communication with the transmitter and antenna array receiver ~~and transmitter~~ at the primary site;

the antenna array receiver at the primary site ~~having an antenna~~ including multiple receiving elements [[for]] configured to receive communications signals over a carrier frequency from the plurality of remote units, at least two receiving elements of the multiple receiving elements configured to receive the communication signals on a same frequency band during any period of time, the receiving elements being partitioned into a plurality of groups disposed remotely from one another by at least a predetermined minimum group spacing sufficient to obtain spatial diversity, each group containing at least one receiving element, at least one group including multiple receiving elements located proximal to one another and no farther apart than a predetermined maximum receiving element spacing to facilitate spatial filtering.

30. (Previously Presented) The network of claim 29, wherein the predetermined maximum receiving element spacing is no more than one-half times a wavelength corresponding to the carrier frequency.

31. (Previously Presented) The network of claim 29, wherein the predetermined minimum group spacing is at least five times a wavelength corresponding to the carrier frequency.

32. (Previously Presented) The network of claim 29, wherein the multiple receiving elements constitute an adaptive antenna array and each group constitutes a sub-array.

33. (Previously Presented) The network of claim 29, wherein the antenna further comprises a controller configured to steer the multiple receiving elements electronically.

34. (Previously Presented) The network of claim 29, wherein the multiple receiving elements constitute a switched beam antenna array.

35. (Currently Amended) An adaptive antenna array architecture for communication, the adaptive antenna array architecture comprising:

a plurality of adaptive antenna arrays for signal reception, the plurality of adaptive antenna arrays including a plurality of sub-arrays, each sub-array including at least two receiving elements, the receiving elements in the sub-arrays being located no farther apart than a predetermined maximum receiving element spacing to facilitate spatial filtering, wherein the sub-arrays being spaced to obtain spatial diversity;

an array fixation structure configured to position the plurality of adaptive antenna arrays;

an array support structure for positioning the array fixation structure at a desired elevation; and

a base station configured to control the adaptive antenna array architecture.

36.-37. (Cancelled)

38. (Currently Amended) A signal receiver for receiving communications signals, the signal receiver comprising:

an adaptive array configured to receive signals from remote units;

a plurality of demodulator units configured to process the signal received;

a plurality of beamformers configured to construct a desired signal response pattern as a function of direction of arrival data of the signals received, the desired signal

response pattern having an angular radius indicative of relative gain of the desired signal in a given angular direction;

a base station configured to modify the desired response pattern to ~~providing~~ provide a higher relative gain of the desired signal in one or more angular directions and ~~minimizing~~ minimize co-channel interference in other angular directions; and

a spatial diversity combiner configured to remove interference from the received signals.

39. (Currently Amended) The receiver of claim 38, further comprising a direction of arrival processor configured to calculate a direction of arrival for the received signals.

40. (Previously Presented) The receiver of claim 38, further comprising an orthogonal frequency division multiple access unit configured to segment available bandwidth into a plurality of frequency bins for allocation.

41. (Currently Amended) A method for reducing signal interference in a communications system, the method comprising:

in a processor, assigning ~~at least~~ one or more ~~widely spaced~~ frequency [[bin]] bins to a user, the assigned frequency ~~each bin~~ bins being widely spaced frequency bins in a neighborhood of bins belonging to other users;

spacing the ~~at least~~ one or more assigned frequency [[bin]] bins ~~belonging to the user to~~ at ~~least~~ one or more sufficiently different ~~frequency~~ frequencies in a dominant direction of arrival of signals in each bin as a function of minimizing signal strength of active bins in the neighborhood of bins belonging to other users to reduce inter-bin interference; and

~~locating~~ placing the ~~at least~~ one or more assigned frequency ~~bin~~ bins ~~with at least one~~ relative to ~~frequency bin~~ bins belonging to [[of]] other users such that directions of arrival for the users are distinctly separable.

42. (Cancelled)

43. (Currently Amended) A method for allocating communication bandwidth in a communications system, the method comprising:

in a processor, determining a first direction of ~~signal~~ arrival of a signal for a first remote user and a second direction of ~~signal~~ arrival of the signal for a second remote user;

assigning the first remote user to a first frequency bin; and

assigning the second remote user to a second frequency bin based at least in part on the first and second ~~directions~~ direction of ~~signal~~ arrival of the signals such that ~~directions~~ the directions of ~~signal~~ arrival of the signals for adjacent frequency bins differ.

44. (Currently Amended) A method for avoiding interference in communications signals in a communications system, the method comprising:

in a processor, partitioning available bandwidth into a plurality of frequency blocks, the frequency blocks including a plurality of bins; and

assigning a user to [[a]] one or more ~~widely spaced~~ [[bin]] bins in each of the frequency blocks, the one or more bins belonging to the user being widely spaced bins covering a wide range of frequencies, each bin being in a neighborhood of bins belonging to other users[[;]] and placed in the neighborhood of bins such that differences in ~~distributing the bins within the frequency blocks as a function of~~ a power of ~~the~~ active bins in the neighborhood are minimized.

45. (New) The method of Claim 41 wherein the processor is a base station.

46. (New) The method of Claim 43 wherein the processor is a base station.

47. (New) The method of Claim 44 wherein the processor is a base station.